

# *Procurement Management of Fresh Agricultural Products E-Commerce Supply Chain*

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**Abstract:** With the continuous improving logistics industry, the convenience of e-commerce is becoming more and more popular. Therefore, it is very necessary to actively carry out research on the procurement management (PM) of fresh agricultural products e-commerce supply chain (ECSC). The purpose of this article is to explore the research on the PM method of ECSC of fish and agricultural products. By using the PM method of ECSC, the supply chain (SC) of fresh agricultural products will become more orderly and centralized. A questionnaire method was used to explore the feasibility of PM in ECSC. The results of the study indicate that it is feasible to use ECSC PM methods for consumer satisfaction surveys, and use ECSC products to diversify the channels of agricultural product SCs. Investigators are 97% satisfied with ECSC procurement. 97% of consumers believe that using ECSC procurement is more convenient and faster, and saves more time.

## **1. Introduction**

Under the new situation, the incomparable time and space advantages of e-commerce in trade practice have made people see its unlimited potential in agricultural trade [1-3]. Various categories of agricultural e-commerce enterprises are full of dazzles. Although fresh e-commerce enterprises are more difficult to operate, they are being used and challenged by more and more people. Among them, fresh agricultural products are closely related to people's green and healthy consumption concepts. It brings people the most authentic and appropriate shopping experience and the increasing economic benefits will occupy an in the future development of national economy [4-6]. Consumers can also promote the sale of other commodities on the platform when they repeatedly buy fresh agricultural products [7]. Fresh produce not only brings new ideas to businesses, but also brings benefits to consumers, in this way, consumers can avoid regional restrictions. and buy the

desired agricultural products [8].

Because of the success of China's e-commerce, the development of new fields of fresh agricultural products has received increasing attention from major e-commerce companies [9]. The famous ecological life network of fish e-commerce platform in China, such as the fish agricultural product SC centered on its own fish e-commerce platform, integrates the buyer's purchase, production and processing, simple packaging, logistics and distribution, storage, processing and distribution, sales and other processes [10]. The SC connects farmers, agricultural products processing plants, logistics companies, e-commerce platforms and users into a whole functional network. This kind of SC is simpler than the fish food SC of supermarkets, and saves the cost of the intermediate distribution process as well as the cost of goods. Can enhance competitiveness [11]. Due to the development of the network economy, the definition of traditional products and resources has expanded, and the structure and meaning of the SC have also undergone great changes. Starting from consumer demand, demand chain management emphasizes the rapid response to consumer demand, and satisfy consumer demand and increase corporate profits, enterprises must accelerate the operation of the SC [12].

Among them, Ildik gave a detailed introduction to ECSC PM, analyzed the current problems in ECSC PM [13]. In his article, Anam proposed the significance and current status of e-commerce research, and explained the future development trend of e-commerce. E-commerce can promote economic development and diversify fresh agricultural products. In addition, it shows the significance and importance of e-commerce [14]. In the article, Liu elaborated on the logistics methods in detail, and put forward various logistics methods, the advantages and disadvantages of various logistics methods, and different logistics methods for different fresh agricultural products to increase the speed of transportation [15]. Ye raised the problems of logistics methods, and pointed out the importance of logistics methods, improving efficiency, saving costs, keeping fresh agricultural products fresh and consumers more satisfied [16].

In short, this article discusses the application of the PM method of ECSC of fish and agricultural products. Specifically, the main research content of this article is roughly divided into five parts: The first part is the introduction part, which aims to make a systematic review of the main research content of this article from the research background, research purpose and research ideas and methods; the second part is theoretical basis, a detailed and systematic summary of the current status of consumers of fresh agricultural products, and an introduction purchase management of e-commerce supply network [17-18]. The third part is related research. Through querying data and conducting relevant experiments, it is possible to judge the PM method of e-commerce supply network of fish and agricultural products. Through specific survey data and research results, it is concluded that the ECSC PM method makes consumers more satisfied, more convenient and faster; the fifth part is the summary and recommendations of this article. Summary of achievements and prospects for the PM of ECSC of fish and agricultural products.

## **2. Proposed Method**

### **2.1. Concept and Characteristics of Fresh Agricultural Products E-Commerce**

Fresh agricultural products refer to primary agricultural products that have not been processed or have undergone only a little processing and cannot be kept at room temperature for a long time. Since ancient times, food has always been the mainstay of the people, and fresh agricultural products are the main food for our residents, occupying a large market share and status. Fresh agricultural products mainly include these characteristics: fixed cycle. Fresh agricultural products

generally have a fixed growth cycle and have a strong seasonality. Different fresh agricultural products have off-peak seasons and cannot guarantee long-term effective supply. Fresh agricultural products are regional. Limited by natural conditions and logistics technology, it cannot effectively cover all markets. Fresh agricultural products have the characteristics of easy loss. It cannot completely avoid its corruption during transportation and processing. The fresh agricultural products SC is different from other SCs in purchasing management. Because fresh agricultural products have regional, seasonal, and periodic production characteristics, there are large differences in the procurement methods developed for scattered farmers and large production bases. How to conduct efficient procurement, minimize the intermediate links between procurement and sales, formulate the number of purchases, and confirm the quality of purchases still need a stable and evidence-based scientific procurement model as a guide for effective market demand forecasting, to enhance the ECSC and its ability to respond to changes in supply and demand.

The continuous development of Internet technology has led to the development of other related industries. E-commerce has increased the information flow between trading parties, improved market transparency, and reduced the harm caused by information asymmetry. E-commerce has been directly transferred from farmland to consumers.

## 2.2. Fresh ECSC Management

There is a deepening process in understanding the connotation of SC: in the early days, it was considered that the SC was only an internal process of the manufacturing enterprise; then the SC was combined with procurement and supply management to emphasize the relationship between suppliers; later it was developed to regard the SC as an organization A system that delivers its products or services to its customers. The system is an organizational structure composed of suppliers, manufacturers, distributors, retail stores, and consumers. The sources of goods for the fresh agricultural products e-commerce platform it is generally divided into two categories.: self-operated agricultural production planting and procurement center procurement.

Management is the most important link in the SC, because the growth cycle of agricultural products is relatively fixed, and such cycle restrictions and restrictions on transportation conditions make it difficult to keep agricultural products fresh. According to market information flow, continuously reduce procurement costs during the procurement process, and occupy the target market in a timely manner. When an enterprise makes external purchases, and prices are easily affected by market fluctuations. Many platforms have a good check on price and quality control, but thanks to the abundance of fresh produce, classification management is more cumbersome. The fresh agricultural products ECSC mainly has the following three logistics operation methods: third-party logistics, supplier-owned logistics, both parties will choose the right logistics party according to their own needs. When users are in After placing an order on the platform, the product will be directly delivered to the customer using professional transportation lines and the "last mile" to ensure the timeliness, safety and convenience of transportation.

## 2.3. The Difference between SC Management and Traditional Management Mode

There are obvious differences between SC management and traditional material control, mainly reflected in the following aspects. Enterprises are regarded as a whole, and SC management covers the entire logistics from suppliers to end users, procurement, manufacturing, distribution, retail and other functional areas. The traditional management mode of the company is strategic management from the perspective of the enterprise, while the SC management is strategic management from the

perspective of the whole SC, with more emphasis and reliance on strategic management. "Supply" is actually a concept Shared between nodal companies throughout the SC.

The relationship between supply and demand is between any two nodes. Market goals, and SC management has a higher goal, through the management of inventory and cooperation to achieve a high level of service, to achieve the SC, it is a win-win situation for all enterprises, rather than just to achieve a certain market goal. The goal of SC management is to improve the level of customer service, reduce the total transaction cost, and seek a balance between the two.

### 3. Experiments

#### 3.1. Experimental Data

The target of this experiment is consumers of PM of fresh agricultural products ECSC. The relevant experimental data is as follows. The electronic commerce of fresh produce is different from other e-commerce products. It has many varieties, wide areas, short storage time, etc. Features. To prevent buying, demand problems in the PM of ECSC of fresh agricultural products, it is very important to implement a consumer demand-centric procurement demand mechanism for consumers to buy fresh products to provide better quality, more abundant purchasing services. Therefore, the SC PM should pay attention to these aspects: first, achieve diversified product choices to meet consumer purchase needs; second, the safety of fresh agricultural products should be guaranteed, and strive to achieve green procurement in an all-round way Thirdly, reduce the loss of fresh agricultural products in logistics and transportation as much as possible, while ensuring the freshness of fresh agricultural products and controlling costs reasonably. Clarifying the consumer psychology of consumers is the key to purchasing demand management. At the same time, it also needs to continuously improve the SC service level of e-commerce of fresh produce. According to market demand, the consumer's purchase demand information can be analyzed, the SC can be coordinated, and the information resources of each link member can be determined to determine a more accurate purchase plan.

To solve the serious homogenization problem of online fresh agricultural products and low gross profit, e-commerce companies need to classify the products they sell, jump out of the framework of serious homogeneity of fresh agricultural products on the market, and establish a set of facets The product zoning mechanism of different consumer groups, from the consumer level demand analysis, determine the market procurement plan and market pricing of different agricultural products, increase and enrich the category thickness of fresh agricultural products, get rid of market homogeneity, and increase the gross profit of fresh agricultural products To gain more profits for e-commerce companies. For consumer-level demand surveys, it can be achieved in these ways: one is to analyze the consumer through the sample survey of fresh agricultural products e-commerce platform, the consumer's demand for fresh agricultural products is studied; second Random sampling survey is used to analyze the consumer groups in different regions, and to grasp the consumption habits and characteristics of different consumption cylinders in different regions; the third is to use big data analysis to analyze e-commerce back-end customer information, summarize consumer consumption quotas, Consumption preferences, etc.

#### 3.2. Problems with the Experiment

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different from other e-commerce products. to prevent this from happening of procurement demand problems in the PM of ECSC of fresh agricultural products, it is very important to implement the purchase demand mechanism centered on consumer demand and provide better and richer purchasing services for consumers to buy fresh products. Therefore, the SC PM should pay attention to these aspects: first, achieve diversified product choices to meet consumer purchase needs; second, the safety of fresh agricultural products should be guaranteed, and strive to achieve green procurement in an all-round way Thirdly, reduce the loss of fresh agricultural products in logistics and transportation as much as possible, while ensuring the freshness of fresh agricultural products and controlling costs reasonably. Clarifying the consumer psychology of consumers is the key to purchasing demand management. At the same time, it also needs to continuously improve the SC service level of e-commerce of fresh produce.

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### 3.3. Experimental Subjects and Methods

The experiment object of this paper is consumers who use the PM of fresh agricultural products ECSC. The experimental method is roughly as follows. Consumers are most concerned about product quality and price, followed by factors such as the speed, accuracy, and convenience of SC distribution. In addition, consumers will be affected by customer service and the decoration of online stores when they consume online. The questionnaire is divided into three parts: personal information, consumer satisfaction with the terminal product sub-attributes of fresh ECSC, and overall satisfaction. The survey questionnaire is sent to consumers who have already experienced fresh e-commerce platform consumption, consumers who understand and are about to try fresh e-commerce. A total of 100 questionnaires were distributed during the questionnaire survey, of which 80 were valid, and the proportion of valid questionnaires was 83.81%. From the personal information of the questionnaire, it can be seen that there are more female respondents than males (it accounts for 60.2% of the total number of respondents), and the education level is generally higher (the cumulative number of respondents with a university degree or above is 86.4%) The respondents were generally between 18 and 35 years old (68.2% of the total number of people), and most of the occupations were company employees (52.3% of the total number of people).

Consumers' satisfaction with the: with fresh ECSC and terminal delivery of goods is not high. Among them, in addition to the high score of price competitiveness 4.1, product quality, delivery speed and customer service are all in the range of 3.5 to 4.0, while the lowest score of product safety is only 3.0, as shown in table 1:

*Table 1. Descriptive analysis of variables*

Variety classes	Minimum	The maximum maximal value	Mean
Price competitiveness	1.0	5.0	4.05
Quality of products	1.0	4.0	3.56
Delivery speed	2.0	5.0	3.76
The service of the service	1.0	4.0	3.89
Product safety	1.0	5.0	2.98

Consumers use these variables to determine the overall quality of the product. Generally speaking, the large standard deviation is related to the services that consumers enjoy, including logistics and distribution, and the sensibility that consumers enjoy when shopping. With rational service, it shows that consumers are not satisfied with the various attributes of the terminal commodities provided by the fresh ECSC.

## 4. Discussion

### 4.1. E-Commerce Consumer Management Analysis

Consumer demand survey can be obtained through the following channels: (1) customers in the background of fresh agricultural products e-commerce platform Household information, such as best-selling categories, seasonal impact, consumer personal preferences, consumption quota range, etc.; (2) fresh food and agricultural products e-commerce platform consumers carry out sampling survey to analyze the change of consumption demand; (3) target groups carry out regional random sampling survey to identify the characteristics of consumer groups and shopping habits. According to the data obtained, the e-commerce platform for fresh agricultural products can generally be analyzed in the following ways, as shown in Table 2.

*Table 2. Analysis mode comparison*

Method of application	Before the data	Data distribution	Readiness time
Seasonal variation method	2	Seasonal variation	60
Regression analysis method	10	Cyclical variation	45
Long term trend method	20	Long-term trend change	50

Consumers have more concerns about purchasing fresh agricultural products in their daily lives. This survey involves the safety, freshness, green food, taste, and price of five fresh agricultural products as factors to consider, website safety, food safety, green Food is difficult to return, and the delivery time is the biggest factor for consumers to choose to log in to the website to buy fresh food. Consumers do not expect that in the future, the frequency of online shopping for fresh food is too high. Within 4 times, the purchase frequency is about 20% from 3 to 5 times a week, and 3% from 6 to 8 times, and no one wants to buy online fresh food 6 times a week. According to the data from statistical analysis, each interval is assumed to be considered according to the normal distribution,

as shown in Figure 1 below.

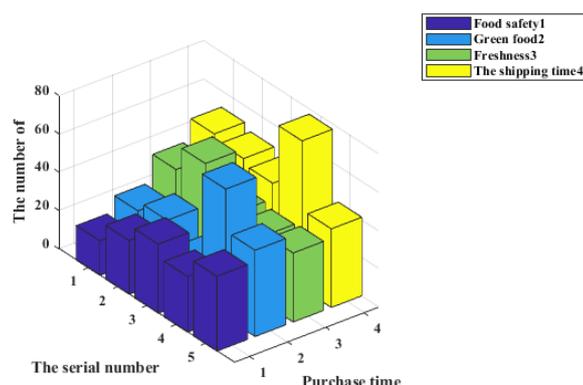


Figure 1. Consumer survey analysis chart

From the data in Figure 1, it can be seen that consumers indicate that if the fresh e-commerce is mature and the purchase experience is good, it will increase the number of online purchases, indicating that consumers accept the expectations of this model of online shopping for fresh food, and are willing to About 80% of the total survey population buys fresh products online.

Consumers' perception and evaluation of online shopping will inevitably affect their attitude towards online shopping, and thus affect the actual purchase behavior. Consumers who believe that online shopping is a positive, suitable, and adaptable shopping method are more inclined to accept buy fresh produce online, while consumers who oppose online shopping and think that online shopping is a negative shopping method tend to Due to the refusal to use the online purchase method, among consumers ' for online shopping of fresh agricultural products, only the expected price has a significant positive impact on consumers' willingness, that consumers who can accept higher prices have relatively strong online shopping wishes, while others This expectation has no significant effect on consumers' purchase intentions. For every 2% increase in price, the purchase intention is increased by 4%. There are significant differences in the purchase intentions of consumers with higher expectations and lower expectations. This means that in practice delivery time, product freshness and taste have no effect on consumers' purchasing behavior. In practice, the shorter the delivery time, the better the product freshness and taste. The more attractive online shopping is for consumers, total monthly household income of consumers has a positive and significant impact on consumers' purchase intentions, that is, consumers with higher household incomes have a higher willingness to shop for fresh agricultural products online, as shown in Figure 2 below.

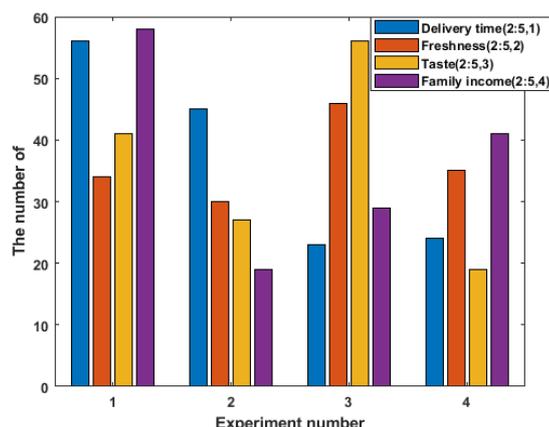


Figure 2. Analysis chart of influencing consumer buying factors

As can be seen from the data in figure 2, consumers are willing to buy fresh produce online in order to save time, convenience and speed. At the same time, there are more varieties to choose from and fresher produce to buy. It has a positive impact on consumers' purchase intention, that is, the more complete the website function is, the stronger consumers' intention to purchase fresh agricultural products online is, and the consumer satisfaction rate reaches 97%.

#### 4.2. Analysis of Logistics Problems in Fresh E-commerce

Logistics distribution is an economic activity that uses the most efficient way to deliver items to users from the distribution center or distribution according to user requirements, referred to as distribution. It includes some elements of logistics, which is a special logistics activity that connects business flow and logistics, and combines "distribution" and "delivery". The logistics distribution has the particularity of distribution, the comprehensiveness of distribution, the technicality of distribution, and the specialization of distribution. They all need to rely on information network technology to achieve. The logistics distribution can be divided into different categories according to different standards, such as: (1) warehouse distribution, distribution point distribution, store distribution, distribution center distribution, and production enterprise distribution are based on the classification of the distribution subject is different. (2) Timing and quantitative delivery, quantitative delivery, timing and route delivery, timing delivery, and instant delivery are based on the classification of delivery time and quantity. (3) The classification standards based on integrated sales-supply distribution, custody and supply, supply and distribution, and sales and distribution are based on different management methods. Logistics distribution is composed of different functional modules such as stock preparation function, storage function, sorting and distribution function, matching function, distribution transportation function, delivery service function and distribution processing function, in which cold chain logistics can reduce product loss, Refrigerated and frozen products are always kept in a certain low-temperature environment in every process before production, storage, transportation, and sales to consumption, to ensure the preservation and appreciation of perishable and fresh products from production to sales The important link of software and hardware needs to be coordinated. It is based on the refrigeration process, assisted by the low-temperature logistics transportation process of refrigeration technology, so the advancement of refrigeration technology will promote the development of cold chain logistics. The logistics are classified according to different temperatures, as shown in Figure 3 below.

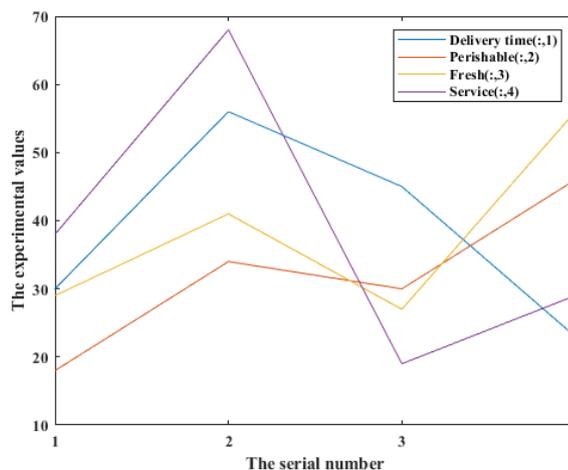


Figure 3. Chart Analysis chart of different modes of logistics

It can be seen from the data in Figure 3 that the improvement of the logistics distribution model of fresh e-commerce follows the SC management theory and transaction cost theory. During the operation of the model, the integration of resources on the chain and the cooperation between the upper and lower chains are carried out to Think about the problem from the perspective of the chain and enhance the competitiveness of the entire industrial chain. At the same time, the logistics distribution model shortens the length of the chain, saves transaction costs, and obtains a 25% discount for customers.

For fresh agricultural products logistics companies, to improve the logistics service ability, first of all, we should ensure the most basic agricultural products logistics transportation ability, constantly improve the coordination ability of the SC, and actively make up for the shortage of the SC, business model innovation and technology innovation. For fresh agricultural products themselves, quality and safety issues and people's life and property safety Interest related, in fresh agricultural products logistics management needs to be paid attention to; today's national political stability is relatively small, the impact is relatively small. In terms of stable political environment, there are relatively few natural disasters. In the era of rapid development of agricultural science and technology, part of the natural risks is caused by lack of technology. Therefore, the overall impact on the natural environment is relatively small. The construction of facilities and public information platform is the basis of the development of fresh agricultural products logistics. This requires the joint efforts of local governments and logistics companies to ensure the smooth and rapid development of fresh agricultural products logistics. The evaluation index system of fresh agricultural products logistics level under e-commerce environment mainly includes three levels. Under the environment of e-commerce, the logistics level of fresh agricultural products is the first level of the evaluation index system, i.e. the target level; according to the principle of index selection, combined with the current situation of fresh agricultural products logistics, four basic risk indicators are selected, including personnel risk, environmental risk and communication risk as the second level, i.e. the criteria level; through the specific analysis of the second level indicators, the specific contents of each indicator are selected As the first layer, index has three layers, namely factor layer. The index of factor index layer can directly reflect the logistics level and current situation of fresh agricultural products. Four standard indexes and 13 factor indexes are selected to construct the evaluation index system. It has a clear hierarchy, as shown in Figure 4 below.

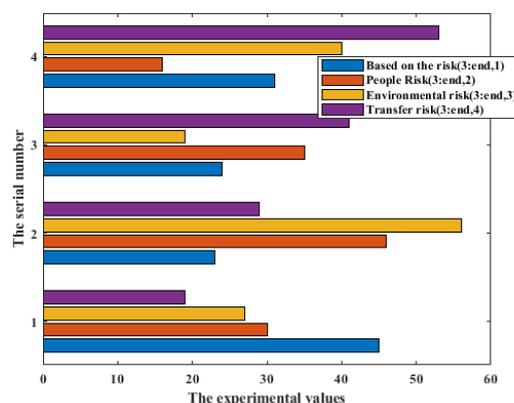


Figure 4. Logistics factor problem analysis chart

It can be seen from Figure 4 that logistics is conducive to the development of agricultural associations and agricultural cooperatives, promotes the diversified, large-scale and specialized development of fresh agricultural products logistics, reduces the loss rate, and improves the operating profit of farmers. How to shorten the transportation time of fresh agricultural products in the transportation process to ensure the quality of fresh agricultural products. The length of transportation time is closely related to the transportation distance. Relevant managers should fully consider the distance and time, further optimize the distribution route, select the path with the minimum flow, and select the period with the minimum flow. Logistics efficiency increased by 65%.

## 5. Conclusions

(1) Through the investigation of consumer satisfaction, it is found that consumer satisfaction is a basic problem. Introduced a variety of consumer satisfaction survey methods, and researched consumers, analyzed the current need from the perspective of consumers, all work should try to meet consumer needs, continue to optimize in PM, promote fresh Development of agricultural product sales.

(2) This paper analyzes the feasibility of the ECSC PM method for fresh agricultural products, puts forward the corresponding working principle and theoretical guidance, and expounds the advantages of the ECSC PM method. The SC PM method reduces procurement cost, loss rate and performance cost.

(3) This paper discusses and verifies the feasibility and superiority of the ECSC PM method for fresh agricultural products designed in this paper. After experimental verification, the satisfaction of consumers surveyed on ECSC procurement reached 97%, 97% of consumers think it is more convenient and faster to use ECSC procurement, which saves more time.

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